Grey Albatross (*Appias melania*)
male and female top
Yellow Albatross (*Appias paulina ega*)
male and female below on *Drypetes* sp.

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Planning and Organization Meetings

A quarterly meeting is scheduled in order to plan club activities and the magazine. See BOIC Programme.

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Membership fees are $30 for individuals, schools and organizations.

Aims of Organization

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

Magazine Deadlines

If you want to submit an item for publication the following deadlines apply:
March issue – February 1st June issue – May 1st
September issue – August 1st December issue – November 1st

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Cover Painting

Grey Albatross (*Appias melania)* and Yellow Albatross (*Appias paulina ega*) – painting by Lois Hughes. Prints available on request.

From the President

Once again we have been the recipients of wonderful articles from both BOIC members and non-members and I thank each of these contributors for sharing their skills, knowledge and observations with us. I know I have said this before but the many hundreds of hours spent on this "work" cannot be given a monetary value.

Thank you Densey (with apologies to our slightly younger other authors) for your spider tale with its wonderful last paragraph which reminds this mere septuagenarian and other younger folk that there are many years or opportunities that we have yet to enjoy.

A vital part of our community involvement is the dissemination of information on ways to re-establish biodiversity and therefore reinforce insect populations through habitat restoration and to provide practical ways to achieve these goals. The club's butterfly host plant book plays an important role in this together with the propagation and distribution of suitable butterfly host plants. I realise that many of our members do not live in the Brisbane area but, from those members who are "local", we always welcome the donation of host plants for sale at our display days. These plants can be left with me or another committee member at any time.

Best wishes *Ross*

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Notes on the Grey Albatross (*Appias melania*) - *Garry Sankowsky*

Sometime in the 1970s I made a trip to Mt Spec (on the Paluma Range, north-west of Townsville) with a birding friend of mine and observed the Grey Albatross butterfly depositing eggs on what appeared to be a *Drypetes* plant. We were moving around quite a bit on that trip and I did not attempt to collect any eggs to breed them through.

In December of 1982 my wife (Nada) and I moved from Mt Tamborine to the Atherton Tablelands and purchased a block at Tolga. Logging operations were still in full swing in the rainforest and we visited a logging area on the Clohesy River, between Mareeba and Kuranda. Even though this is not a particularly high altitude site Grey Albatross butterflies were very common. Groups of males were observed gathering on the damp road near river crossings. We had seen huge numbers of butterflies doing this on previous occasions in the Good Night Scrub near Wallaville, south-west of Bundaberg, and had noticed that it was only males that do this.

My camera equipment was quite limited then but I managed to get a few pictures. At the Clohesy River there were several species on the damp road but mostly Grey Albatrosses. There were several kilometres of new logging roads to wander along and in one area I saw a female laying on a *Drypetes* plant that was different from the one at Mt Spec. I have always called this one *Drypetes* sp. Clohesy River and still consider it to be a separate species from any of the named ones. It occurs in low to mid altitude, well developed rainforest, from the Wet Tropics to Cape York.

Males of the Grey Albatross butterfly and other species "mud puddling".

Until we moved to north Queensland my main interest in collecting plants was to grow butterfly host plants but as we now had a two hectare property I expanded it to rainforest plants in general. Collecting propagating material from state forests was then very simple with a Minor Products licence and I started collecting a wide range of plants, including host plants, and planting up our block which is now a fully functional artificial rainforest.

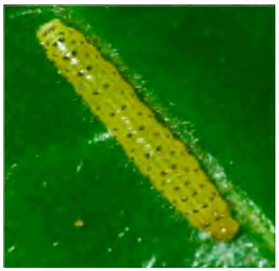
Usually each summer there are migrations of Grey Albatross butterflies crossing over the Atherton Tableland, moving to and from the various mountain rainforests around us. For many years the butterflies just passed through but as our rainforest plantings became more mature many butterflies became permanent residents, spending the winter/dry season in our garden. I have observed that all Pieridae butterflies survive the winter/dry season as adults, resting most of the time but making short flights from time to time and taking nectar. It is only in very recent years that the Grey Albatross has done this.

Grey Albatross (*Appias melania*) male

The new growth of *Drypetes* develops very fast and the Albatross larvae do likewise. The whole larval stage only takes from seven to ten days.

Eggs of Grey Albatross

Grey Albatross larvae in various instars



As the larvae grow they gradually develop more defined markings.

Even though no eggs were laid on *Drypetes deplanchei*, the final instar larvae transferred to this plant when all the foliage of *Drypetes* sp. Clohesy River had been demolished.

I have only observed the Common Albatross pupating on the top side of leaves but the Grey Albatross larvae used both sides of the foliage.

The pupae showed a wide range of colour variation, unlike my observations with the Common Albatross.

Grey Albatross – pre-emergent pupa

After only about seven days the butterflies started to emerge from the pupae. This is similar to the Common Albatross situation.

◄ Grey Albatross – adult female

Grey Albatross - ► recently emerged male drying wings

How does one tell the difference between the two Albatross butterflies in the early stages?

From my observations one can't! I don't have a good series of images for the Common Albatross, just some old slide pictures so this is something to work on.

Common Albatross
Prepupal larva and pupa

Grey Albatross
Prepupal larva and pupae

Allowing for the variation in the Grey Albatross pupal colours, I don't think it is possible to distinguish between the two species.

Photos Garry Sankowsky

Drypetes sp. Clohesy River - Host plant for Grey Albatross -

Garry Sankowsky

Drypetes sp. Clohesy River is not recognised by botanists but when I first visited the Clohesy River logging area in 1983 I saw a Grey Albatross female laying on it and observed that this plant looked very different from the usual *Drypetes deplanchei* which occurs in 'dry rainforest' (vine thickets or hoop pine scrubs).

This is the plant most used by the Grey Albatross butterflies in our garden. The main reason is that the normal high altitude host plant *Drypetes acuminata* is difficult to grow and in our garden they do not flush with new growth as often or as well as the Clohesy River species.

It is a small to medium tree with some serrations on the juvenile leaves but these almost disappear on mature growth. It is found in rainforests of the Wet Tropics at low and mid altitudes as well as on Cape York Peninsula in very well developed rainforest.

Cluster of buds and flowers of *Drypetes* sp. Clohesy River

Drypetes sp. Clohesy River

Drypetes deplanchei in fruit

Drypetes deplanchei juvenile foliage

Drypetes acuminata – the most common host plant of the Grey Albatross, restricted to high altitude rainforest
Photos Garry Sankowsky

ITEMS OF INTEREST

Tale of a Tailed Spider – *Densey Clyne*

It was just a string of debris caught on a bit of spider web on an azalea bush in my garden. Or was it? There was something about it that warranted a closer look.

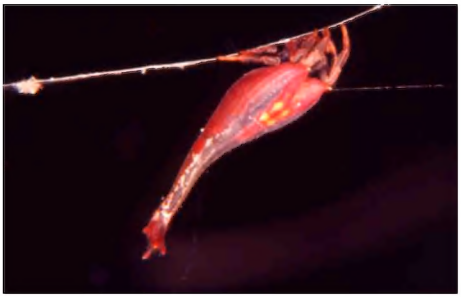
We've all had the experience in nature where something of no significance suddenly takes on a meaningful shape as a living thing. A twig among twigs becomes a stick-insect; a waterlily bud becomes the head of a tortoise taking a breath; a pattern of light and shade above us becomes a brightly plumaged bird. You wonder how you could have failed to see the obvious.

My double-take was prompted by a hint of symmetry in what my eyes had simply passed over. Now a close look showed that the 'debris', caught on a strand of spider silk, was too regularly spaced to be accidental. It formed a series of eight elongated bulges or bumps, light brown in colour, strung along an upper radial thread or spoke of a small, finely woven orb web. I recognised the bulges then as a spider's eggsacs, disguised with fragments of dead leaf. So where and what was the spider?

The upper segments of the web immediately to the right and left of the eggsacs were free of the spiralling thread except at the hub where it was complete for a few rounds.

The string of eggsacs ended at the hub and to my surprise and pleasure the last one turned out to be the spider herself. Creamy-brown with some darker striations along the sides her mimicry was nearly perfect from the front. From behind, though, I saw that her body ended in a 'tail' that extended halfway up the nearest eggsac. She resembled a tiny leaf, just 21 mm long, the dark-tipped tail forming the leaf's petiole. It was that tail with its knobbed end that gave her away as *Arachnura higginsii*, the scorpion-tailed spider – a first sighting in my spidery suburban garden!

Of course there were others in the garden; I had simply overlooked them. Now I had got my eye in I realised they were quite common. The next web I found, this time without eggsacs, was built across a gap in a double trunked gum-tree that had rough red bark. Surprisingly, this female was an attractive salmon-red with some yellow spots and patches on the back and red legs and tail tip. The colouring was striking. Was this a juvenile?



Arachnura higginsii – young adult female

Every morning this female rebuilt her web, in which fragments of red bark from the gum-tree were often caught. One morning I found that her new web, while mainly free of these fragments, had some of them irregularly placed on the upper radial line. From that time on she left this important line intact, though replacing the rest of the web daily. One night I found her close to the hub making her first eggsac. I watched the procedure with fascination and timed it.

First the spider wove a strip of woolly silk about 10mm long, moving up and down, thrusting her spinnerets against the radial line as she went. At each new position her abdomen swung outward at about 45 degrees, drawing out the thread then fixing it in place as a loop. Her 'tail' always remained at a slight angle to the rest of her, bent upward from just behind the spinnerets. She attached silk at the rate of 30 to 35 times a minute to begin with but later slowed down to about 20 times, moving irregularly, up, down and around. She rested a while against the completed mat of woolly silk, then began to lay her eggs against it.

Egglaying involved the same kind of thrusting motion as before but now she worked more slowly. It took just under three minutes for the eggs to come out, in one piece, as a creamy globule. The spider immediately started covering the exposed eggs with silk, at the same time adding strengthening silk to the radial line just above the eggsac. The completed eggsac measured the same length as her body minus the tail. The whole procedure took forty minutes, from 9.20 pm until 10 pm, and when I went outside again at 10.30 pm I found her resting on a different part of the web. Five days later the same spider had made her second eggsac, above the first one. Still

handsome, she was losing a little of her red colouring, and she also appeared to be growing. I wondered whether a mature female spider could continue to moult or if the colour was simply fading.

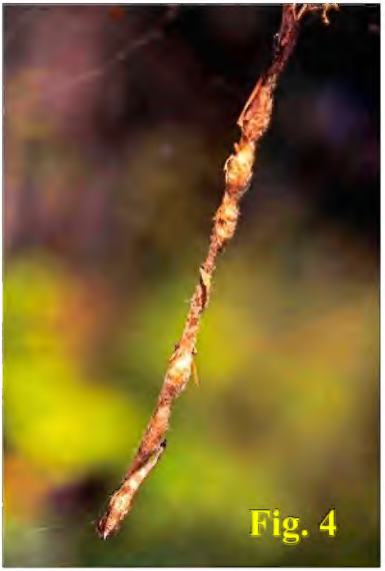


Fig. 1. Female with eggsacs
Fig. 2. Newly moulted with exuviae
Fig. 3. Young adult female with debris in web
Fig. 4. Female with string of eggsacs

One windy night I watched this female moving rapidly about while she demolished part of her tattered web. During this operation she approached a speck of red bark and pressed her spinnerets against it so that it adhered to them. Carefully cutting the thread of silk the fragment had stuck to she carried it to the second eggsac and attached it. This was already partly camouflaged with similar fragments. During a week of continued rain and wind the spider failed to replace her old web, leaving intact only its supporting threads and the radial line with the two eggsacs. Twelve days later, on a renewed web, the spider made her third eggsac. Those three and the line they were attached to were by now camouflaged with slivers and fragments of red bark from the gum-tree, no doubt dislodged by climbing possums. Was it a coincidence that these so clearly matched the colour of the spider?

After a period away from home I find the spider now has four eggsacs. She has lost most of her red coloration and she measures 17mm. The individual eggsacs are now quite hidden within their untidy camouflage, which contrasts with the neat nursery of my first-found female.

This week I have located four more spiders of different ages and different colours. The first, 11mm long, a beautiful dark, velvety red with a row of tiny, light-coloured spots on her back, rested on the horizontal thread of a rough triangle in which there was no actual web. The second, 9mm long, creamy yellow in colour, has an 80mm diameter perfect web, that is, with no clear segment on either side of the uppermost radial line. The third, 10mm long, is again salmon-red. It also has an 80mm web but this has the characteristic clear segments and also a few specks of debris along the upper radial spoke. The prize for me was my fourth find, a female I came across just after her final moult, hanging from her discarded juvenile skin. She was a beautiful lemon yellow colour with a red tail tip.

I conclude that the colour differences I've seen relate to the growth stages of these intriguing little spiders, and I shall watch their progress with interest. And by the way, in spite of its misleading name, the spider has no sting and is harmless to humans. I prefer to call it simply the Tailed Spider.

All of the above, dear reader, was written 45 years ago! This only goes to show that the careful notes you take while patrolling your garden can turn up much later to surprise and intrigue and remind you of the happy discoveries of yesteryear!

Photos Densey Clyne

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Getting more pixels part 2: bigger, more distant subjects – *Malcolm Tattersall*

Continued from *Metamorphosis Australia* issue number 68

How about the subjects which would be easy to shoot if only we could get close enough, such as hyper-alert dragonflies, skittish butterflies and wary birds?

If we have a zoom lens, we automatically zoom out to its longest setting, of course. If we have a point-and-click camera that's all we can do (unless we can improve our stalking techniques) but if we can change lenses we can reach for a *telephoto lens*.

Any lens of 85mm or longer is regarded as 'telephoto' and there are plenty to choose from. Common telephoto zoom lenses have ranges from 70-200, 55-250 and 75-300 up to 100-400mm. Prime (i.e. fixed focal length) telephotos up to 400mm are also worth considering.

Longer lenses let you get closer but at a cost in price, size, weight and susceptibility to camera shake, so 400mm is a reasonable upper limit for most of us. A prime lens is generally cheaper than a zoom lens of the same length but in either category you pay more for wider aperture (which allows faster shutter speeds) and for quality. Prices range from a couple of hundred dollars to several thousand; if you are already willing to pay more, you can go up to tens of thousands but probably don't need this article.

Their magnification of distant subjects is proportional to their focal length. At three metres, the field of view of a 400mm lens is about the size of a postcard (15cm) and a 50mm butterfly will become a 1600px image. At the same distance, the field of view of a 200mm lens is twice as wide (30cm) while the field of view of a 100mm lens is twice as wide again and our 50mm butterfly will be only 400px wide. (These figures are correct for most entry-level and mid-range SLRs. The field of view of top-end cameras will be wider but the pixel count of the bug's image will be roughly the same, for reasons which would take too long to explain here.)

Why can't we use a telephoto lens as a macro? Simply because we can't get close enough: telephotos typically have a minimum focusing distance between 1.5 – 3.5m and a maximum magnification around 0.25. Working the other way is fine, however, and a 100mm macro lens is an excellent short-telephoto lens.

Everyone has different priorities and needs, but to summarise:

- If you have a compact digital (point-and-click) camera and it won't take the pictures you want, you will probably have to upgrade to a similar camera with a wide optical zoom range, or to a bridge or SLR model.
- If you have an SLR with only the basic lens, a macro lens will let you take smaller subjects such as mosquitoes and jumping spiders. A longer macro (around 100mm is fine) is better than a short one, and may well become your favourite lens for all insect photography.
- Close-up filters or extension tubes are a cheaper but not so powerful substitute for a macro lens.
- If you have an SLR and want to photograph dragonflies and birds, a telephoto lens is your solution and a 70-300mm (or thereabouts) zoom is a great starting point.

One of the first shots I took with my 75-300mm telephoto, uncropped here (image is 3888 x 2592px) to show its benefits. The subject was a Common Eggfly, *Hypolimnas bolina*, two or three metres away in the middle of a patch of tall weeds; the 300mm end of the lens brought it nice and close and a shallow depth of field got rid of nearly all the clutter for a very pleasing result.

Photo Malcolm Tattersall

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Life history notes on the Rock Ringlet, *Hypocysta euphemia* Westwood, 1851 Lepidoptera: Nymphalidae - *Wesley Jenkinson*

The Rock Ringlet is encountered from south-eastern Queensland southward to northern Victoria. Some of the most northern localities recorded in south-eastern Queensland include Flinders Peak (M. & D. Sands, 2003), Springbrook, and Mount Maroon in the Mount Barney National Park, where it is known from limited specimens. It then becomes locally common along the Granite Belt south of Stanthorpe into New South Wales. This species has a rather specialised habitat and appears to be restricted to higher altitudes throughout rocky regions along the Great Dividing Range where it is locally common.

The adults of this species are slow fliers and they are typically found flying close to the ground near soft grasses in rocky areas and along steep cliff faces within open forest and woodland. Unlike the other species in the genus they prefer to settle on large rocks or rocky slabs in sunny areas. During hot conditions when settled the wings are angled to deflect the sun's rays as per the image on the previous page. The adults sometimes roost overnight in small aggregations in small sheltered caves created by overhanging rocks. Both sexes feed from a variety of small native and introduced flowers. While feeding at flowers the wings are momentarily opened and closed several times before moving to the next flower. Once disturbed they can fly quite rapidly and can be difficult to follow.

Whilst in flight, the adults can be confused with older worn specimens of the Orange Ringlet (*H. adiante*) and the Orange-streaked Ringlet (*H. irius*). In comparison to *H. adiante,* the adults are generally larger in physical size and *H. euphemia* also has two eye spots known as ocellus (plural of ocelli) on the upper side of the forewings. These are absent from all other species in the genus.

The sexes are quite similar in appearance. In comparison to the males, the females are brighter orange, the forewing is slightly broader with the termen more rounded (Braby, 2000).

The actual wingspan for the pictured males is 34mm and 36mm for the females

Hypocysta euphemia (Rock Ringlet)
Images left to right: male, female, male underside, female underside

On a recent trip during April 2012 to the Bolivia Hill/Deepwater region south of Tenterfield, a female was collected and kept in captivity. She laid two eggs and was then released. These eggs were kept for life history studies. Subsequently the larvae were successfully raised on the native grass Green Couch (*Cynodon dactylon*) with both of the adults emerging as large sized females. Like *H. irius* it appears that the native host grasses for this species so far are not recorded.

The eggs were smooth and cream coloured, slightly off spherical, approximately 0.8mm high x 0.8mm wide.

Freshly laid egg of *H. irius*

1st instar larva

2nd instar larva

Final instar head capsule

3rd instar

4th instar

The first instars emerged early in the morning and their eggshells were consumed shortly afterwards. The two larvae were observed feeding solitarily during daylight hours and resting on either side of the leaves of the utilised host plant. Typically, like other species in the genus, they were very slow moving and fed from the outer edge of the leaf. Both of the larvae raised completed four instars (similar to *H. metirius, H. irius, H. pseudirius* and *H. adiante*). The final instars attained a length of 26mm and both emerged as females.

The pupae were attached by silk to grass stems, hanging by the cremaster with the head suspended down. They were light grey in colour with a length of 13mm.

Pupa lateral, dorsal and ventral view

The total time from egg to adult was about two months, with egg duration of 7 days, larval duration 37 days and pupal duration of 21 days.

Within the boundary of the new Scenic Rim Regional Shire, south of Brisbane, I have adult records for the months of October and March from Mount Maroon within Mount Barney National Park. These records probably indicate there are two generations annually in this region.

Reference:

Braby, M.F., 2000. Butterflies of Australia – Their Identification, Biology and Distribution. vol 2. CSIRO Publishing.

Sands, M. & D., 2003. New Butterfly Records, *News Bulletin, Entomological Society of Queensland Inc.* Vol 31, Issue3

Photos Wesley Jenkinson

Field Notes: Gulf Country extensions to the known distribution of the Long-tailed Pea-blue, *Lampides boeticus* (Linnaeus 1767) in Queensland (Lepidoptera: Lycaenidae) - *Kelvyn L. Dunn*

E-mail: kelvyn_dunn@yahoo.com

During spring of 2011 and 2012, I investigated the distribution of a number of butterfly species in northwestern Queensland to ascertain the northernmost limits of those in the region where knowledge gaps were evident. Although some keen enthusiasts have opportunistically sought various species in the far west of the state (Le Souef 1965, 1975a,b, 1976, 1979; Franklin 2007), in general there has been relatively little survey of the butterfly fauna of western Queensland (see Dunn & Franklin 2010, online appendix) compared with coastal areas. This disparity might infer then that published knowledge of the spatiality of common species in this region would be fragmentary, and my findings of a more expansive distribution for particular species are supportive of this. Indeed, I found that one cosmopolitan species, the Long-tailed Pea-blue, *Lampides boeticus*, extends much more widely in the north than was currently thought, and this paper lists my survey results for it.

That species, *Lampides boeticus*, may be very seasonal in its timing, and when adults are present in the outback, they are often inconspicuous away from larval host plants, and so may remain undetected; this would likely explain their sporadic rather than routine presence during random surveys, migrations aside. Because the butterfly is widespread across much of Australia and, seasonally, becomes a familiar sight in the eastern coastal plains, frequent retention of voucher specimens for the cabinet is unlikely, as the species does not stir collector interest. For that same reason, documentation in the literature of many casual sightings, over the decades, will have more than likely not occurred. The belief that *L. boeticus* is of patchy distribution in the remote north of Australia has hinged on available knowledge (actually an absence of it): Braby (2000) presented a synoptic range-fill map based on records in museums and those in literature sources then available – knowledge under-girders biased by collector partiality against and indifference towards this butterfly. The northwestern boundary in that source roughly coincides with the Flinders Highway (between Hughenden and Mount Isa), a major transport route that has acted as a huge 'butterfly-transect' for common species (if one could imagine such). This artefact of sampling, created by regularity of collector presence along highways, increases the chance of encounters (and reports of these) across time and so upholds the impression of a range limit, albeit an artificial one. Selected sites (known to me) broadly near this latitude, extending from the Dividing ranges, include Forty Mile Scrub (Hill *et al.* 1992), 9km west of Mt Surprise (Braby 1997), Burra Range (LeSouef, 1975, Atkins *et al.* 2003), and Richmond (T. Woodger p.c. 2000). Farther inland there seems a wide gap in the records for this butterfly with isolated reports emerging again, beyond the Mount Isa region, at Musselbrook Reserve (Daniels & Edwards 1998), Elizabeth

Creek at 18º12'S, 138º30'E, Main Gorge in Lawn Hill National Park, and at a Thorntonia R tributary, at 19º30'S, 138º56'E (Franklin 2007). These records underpin the knowledge of the current limits of the species in that region.

Several favoured larval hosts of the butterfly occur in varied habitats in northern Australia; the Rattlepod species photographed (Fig. 1), namely *Crotalaria novae-hollandiae,* is one that blossoms conspicuously in spring. *Crotalaria* is prominent in disturbed areas, particularly along roadsides, adjacent shrubby woodlands, open woodlands and gallery forests. When these herbs are flowering, *L. boeticus* can become abundant in their immediate vicinity, with most patches having at least one adult perched nearby (Fig. 2). In October and November, during the butterfly's spring appearance I systematically sampled suitable roadside habitat (where I saw these larval food plants flowering) for evidence of the butterfly in the Gulf Country. That evidence obtained (Table 1) suggests that *L. boeticus* is widespread north of the Flinders Highway, occurring north to 18º34'S, but beyond that latitude, I saw none. The species distribution is likely continuous throughout the region of occupancy (defined as where regular encounters occurred), but away from the larval food plants (or nectar sources) the fast flying adults are easily overlooked. Populations of this butterfly will almost certainly be found westward at this latitude, beyond the Camooweal district and into the Northern Territory, where encounter-records are presently very few and widely dispersed. On this likelihood, the far western section of the Gulf Country (and even the coastal areas) could be the focus for those who wish to expand upon this regional study.

Whenever possible capture of one or more adults was the means to confirm identifications with certainty, but close observations in the field (achieved where one or more landed to feed near ground level) were equally suited for this purpose. However, the presence of very similar looking butterflies in the Gulf Country often confounds reliable identifications of flying adults (those that fail to perch); capture of these is required for rigour, that way the data gathered are trustworthy. More often than not, passing females of *L. boeticus* would inspect the larval hosts for egg laying purposes (Fig. 3), particularly if small black ants had colonised the herbs, and at times, accompanied by males too, they would feed briefly at the Rattlepod flowers (Fig. 4). When satiated, males either perched on the Rattlepod foliage, about 0.5-1m above ground for lengthy periods, or patrolled the herbage to intercept intruding butterflies that strayed into the airspace under surveillance. Often this resulted in a flurry of activity involving three or more males, which then drew my attention to their presence during surveys along the highway shoulder-reserves. I undertook observation for butterflies in general throughout the day at suitable sites in the Gulf Country, but the evidence of this species' presence (Table 1) indicates that more encounters with adults occurred during early and mid afternoon (between 1200 and 1600 hours). This skew might be an artefact of the sampling technique; more time was spent looking for butterflies in the afternoons (3 hours in the mornings (0900-

1200) and 5 hours (1200-1700) in the afternoons was the usual spread of my activity, although sampling outside this range occurred at times as opportunities arose). Alternatively, perhaps I visited sites where this butterfly was active at those particular times by chance alone, driving time and other factors considered. Nonetheless, survey in mid and late morning was more enticing when the sun was less intense and temperatures were in the mid 30s. From about midday until late afternoon shade temperatures in October often reached or exceeded 37ºC at which times butterfly activity was harder to detect as some species roosted in shade or congregated in numbers at the base of shrubs. Hence, flying butterflies were often in low numbers or remained uncommonly seen during the heat of the day in the outback. Indeed, on occasion I recorded no adults of any species (even after 20 minutes looking) at some sites of the many visited.

The 30 new locations where I found this butterfly in the Gulf Country (Table 1 a-b) now add to the knowledge base, and expand upon preliminary work by Franklin (2007) who provided three new sites to the north of Camooweal. The inclusion of observations may raise concerns in the minds of some professional workers or fundamentalist collectors who believe that the retention of vouchers (intended for an institution in time) *must* remain the minimal standard required for any *revision* of established spatial or temporal knowledge. I respect that viewpoint – I took vouchers at intervals for rigour (56% of handled adults from the new localities were retained, the remainder released). For purposes of transparency, those records gained by 'observation-only' (50% of all encounters at the new sites) are marked ('obs.') to distinguish them from those substantiated by handling (50%). Almost all observations included involved certain identifications (category 1) – in each case, I had seen sufficient characters to achieve that level of confidence (81% of observations). A few (19%) were to a level of almost certain (category 2) and these lower grade observations are marked 'C2' (see Dunn 2011 for discussion of these and other categories used in the Dunn & Dunn database). Some variation from coastal populations of the species was noticeable: a small portion of adults from the Gulf Country, based on those obtained on these two trips, possessed a distinct pinkish suffusion to the upper side, localised near the hind wing tornus and sometimes extending as a faint terminal band to the wing apex. This male variation has not been noted previously (*c.f.* Braby 2000) but may be commonplace (rather than a localised trait) among inland Australian populations.

All distances were measured by road from the Post Office of the nearest township and were calculated by vehicle odometer, usually from the closest road marker (where these were available) to reduce instrumental error; they are considered precise but variably accurate. The sites (listed from north to south) include a geocode resolved to one minute (although specimens retained are labelled more precisely than this), and collectively provide evidence of a broad distribution in northern Australia, inland from the Carpentaria coast. GPS coordinates were obtained at each site with a hand-

held trekking device, and the measured road distances to each were checked later on Google Earth (www.google.com/earth/index.html) to ensure agreement (that is, to within a kilometre) – there was minor disagreement for some though where large road distances were involved. Similarly, the elevations obtained from a hand-held GPS unit appear a little flexible, at times varying (sometimes by 10-20m) from those indicated by Google Earth.

Acknowledgement:

Dr John Moss kindly identified the *Crotalaria* species depicted (Figs 1-4) as C. *novae-hollandiae*, although one or more other species could have been involved at other sites where adults were present; Dr Russell Best (Victoria University) concurred with this identification.

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L. boeticus on Rattlepods (*Crotalaria novae-hollandiae,* subsp. *novae-hollandiae*): 35km SSW of Burke & Wills Roadhouse, on 01 Nov 2011.

Fig. 1. Blossoming plant growing on road shoulder area; a conspicuous sight during late spring in the southern Gulf Country.
Fig. 2. Adult roosting, and on this occasion on budding raceme; a common habit during hot and overcast weather; this adult was rotating its hind wings in the familiar 'figure 8' pattern, which makes the tails mimic moving antennae.
Fig. 3. Female ovipositing on stems; no ants were visible on this occasion.
Fig. 4. Male feeding at flower; a frequently utilised nectar source by both sexes.

Photos Kelvyn Dunn

Table 1a. Thirty new locations for *L. boeticus* in northwestern Queensland and associated information

Location	Geocode	Approx Elev.(m)	Date	AEST (hrs & min)	Abundance
Flinders R., at 21km W of Wondoola airport (near Wondoola homestead)	18°34'S, 140°43'E	24	12 Oct 2012	1145-1215	One (Obs)
6km NE by N of Gregory Downs	18°36'S, 139°17'E	74	11 Oct 2012	1400-1410	Many
4km NE by N of Gregory Downs	18°37'S, 139°16'E	77	10 Oct 2012	at 1410	One (Obs)
Gregory R., Gregory Downs	18°39'S, 139°15'E	81	10 Oct 2012	1255-1355	One (Obs-C2)
49km NW by W of Burke & Wills Roadhouse (RH)	18°59'S, 139°59'E	59	10 Oct 2012	1010-1020	Few
Single Ck, 45km NW by W of Burke & Wills RH	19°01'S, 140°00'E	59	11 Oct 2012	1720-1730	One (Obs)
19km SW of Burke & Wills RH	19°22'S, 140°14'E	104	01 Nov 2011	1200-1220	Few
35km SSW of Burke & Wills RH	19°30'S, 140°14'E	125	01 Nov 2011	1240-1300	Many
Dugald R., 70km SE by E of Burke & Wills RH	19°32'S, 140°51'E	126	09 Oct 2012	1705-1715	Few (Obs-C2) – flying northward
67km S by W of Burke & Wills RH	19°47'S, 140°14'E	167	01 Nov 2011	1440-1420	Many (Rel)
Cloncurry R., 101km NW of Julia Ck	20°02'S, 141°07'E	94	09 Oct 2012	1535-1615	One
84km NNW of Cloncurry	20°03'S, 140°13'E	180	16 Oct 2012	1540-1640	Few (Rel)
Terry Smith Lookout, 80km NNW of Cloncurry	20°05'S, 140°14'E	197	16 Oct 2012	1700-1715	Few (Rel)
Gilliat R., 94km NW of Julia Creek	20°05'S, 141°08'E	91	09 Oct 2012	1320-1335	Many (Obs) – nectaring
Dugald R., 67km NNW of Cloncurry	20°12'S, 140°14'E	183	16 Oct 2012	1310-1325	Few
18km N of Quamby, on Sedan Dip Rd	20°13'S, 140°18'E	176	22 Oct 2012	at 1545	One (Obs) – nectaring
17km N by W of Quamby, on Sedan Dip Rd	20°14'S, 140°15'E	194	22 Oct 2012	1535-1540	Many (Obs) – nectaring
Quamby Hotel, NW by N of Cloncurry	20°22'S, 140°17'E	186	16 Oct 2012 01 Nov 2011	1300-1335 1530-1545	Many (Obs) Few – patrolling hosts

Table 1b. Thirty new locations for *L. boeticus* in northwestern Queensland and associated information (*continued*)

Location	Geocode	Approx Elev.(m)	Date	AEST (hrs & min)	Abundance
Lake Moondarra 'Transport Bay', on hill	20°35'S, 139°35'E	372	18 Oct 2012	1600-1630	Few (Rel) – hilltopping
Lake Moondarra at 'Transport Bay'	20°35'S, 139°35'E	328	02 Nov 2011	1130-1200	One (Obs-C2)
0.5km N of Julia Creek, at van park	20°39'S, 141°45'E	122	08 Oct 2012	at 1740	One (Obs) – feeding at soak
35km NE of Hughenden	20°39'S, 144°23'E	353	28 Oct 2011	1100-1120	One (Obs) – ovipositing
22km W of Julia Creek	20°39'S, 141°32'E	117	08 Oct 2012	1645-1655	Few
25km W of Julia Creek, at McKinlay Hwy junction	20°40'S, 141°31'E	133	08 Oct 2012	1625-1635	One (obs) – nectaring at other flowers
Cloncurry R., 3km NNW of Cloncurry	20°41'S, 140°30'E	183	22 Oct 2012	1200-1235	One (obs) – perched
Rotary Lookout, 2km W of Cloncurry	20°42'S, 140°29'E	227	15 Oct 2012	1620-1740	Few (Rel)
			21 Oct 2012	1625-1710	Few
			02 Nov 2011	1555-1605	Few (Obs) – nectaring
Cloncurry R. anabranch, at 1km W of Cloncurry	20°42'S, 140°30'E	220	22 Oct 2012	1100-1140	Few (Rel)
40km W of Richmond, at creek crossing	20°44'S, 142°46'E	172	31 Oct 2011	0855-0925	Few – nectaring at other flowers
Burke & Wills memorial, Corella R., 45km W by S of Cloncurry	20°47'S, 140°07'E	263	21 Oct 2012	1505-1525	One (Rel)
			02 Nov 2011	1500-1520	Few (Obs)
16km NE of Hughenden	20°47'S, 144°18'E	324	28 Oct 2011	1030-1035	One (Obs) – ovipositing

Key: Feeding instances pertain to the yellow flowers of *Crotalaria* spp., unless stated otherwise.

The Crambid types of Moreton Bay; their Author and Collector (Lepidoptera: Crambidae) – *Peter Hendry*

While recently researching the Australian moths in the family Crambidae, it came to my attention, the number of times Moreton Bay was listed as the collection point of the type species (the type species being that specimen used as a basis for description of a species new to science (Gordh and Headrick, 2011)). Why did Moreton Bay stand out? I have lived by the Bay all my life, being born in Wynnum and lived in Manly for forty years, both bayside suburbs. I now live in Sheldon a suburb of Redland City also on the coast of the greater region of Moreton Bay. It must be said though that Moreton Bay was the name of the colony which became Brisbane when Queensland was separated from New South Wales in 1859. My curiosity got the better of me so I decided to make a list, as follows:

Species	Author, year	Type Locality	Collector
Agrotera amathealis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Pyralis ornatalis	Walker, 1866	Moreton Bay	Mr. Diggles
Bradina mannusalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Cirrhochrista arcusalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Cirrhochrista brizoalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Cnaphalocrocis medinalis	**(Guenée, 1854)**	**East India**	#
Botys nurscialis	Walker, 1859	Moreton Bay	Mr. Diggles
Cnaphalocrocis poeyalis	**(Boisduval, 1833)**	**Madagascar**	#
Asopia venilialis	Walker, 1859	Moreton Bay	Mr. Diggles
Conogethes ersealis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Conogethes semifascialis	(Walker, 1866)	Moreton Bay	Mr. Diggles
Diasemiopsis ramburialis	**(Duponchel, 1833)**	**France, Corse**	#
Diasemia leucophaealis	Walker, 1866	Moreton Bay	Mr. Diggles
Eurrhyparodes bracteolalis	**(Zeller, 1852)**	#	#
Isopteryx accessalis	Walker, 1859	Moreton Bay	Mr. Diggles
Eurrhyparodes tricoloralis	**(Zeller, 1852)**	**Natal**	#
Isopteryx abnegatalis	Walker, 1859	Moreton Bay	Mr. Diggles
Glyphodes negatalis	**(Walker, 1859)**	**Sri Lanka**	**R.Templeton & Mr. Stevens**
Botys phanasalis	Walker, 1859	Moreton Bay	Gibbons, Esq.
Haritalodes derogata	**(Fabricius, 1775)**	**India orientali**	#

Botys otysalis	Walker, 1859	Moreton Bay	Mr. Diggles
Herpetogramma hipponalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Botys pigresalis	Walker, 1859	Moreton Bay	Mr. Diggles
Herpetogramma licarsisalis	**(Walker, 1859)**	**Malaysia, Sarawak**	**Mr. Wallace**
Botys pharaxalis	Walker, 1859	Moreton Bay	Mr. Diggles
Herpetogramma piasusalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Metasia pharisalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Metasia tiasalis	**(Walker, 1859)**	**Sri Lanka**	**R. Templeton**
Asopia microchrysalis	Walker, 1866	Moreton Bay	Mr. Diggles
Nacoleia amphicedalis	**(Walker, 1859)**	**New South Wales**	**Mr. Saunders**
Isopteryx bilunatalis	Walker, 1866	Moreton Bay	Mr. Diggles
Nacoleia rhoeoalis	**(Walker, 1859)**	**Australia**	**Mr. Saunders**
Botys hypsidesalis	Walker, 1859	Australia	M. Darnel's collection
Isopteryx sordidalis	Walker, 1866	Moreton Bay	Mr. Diggles
Nacoleia murcusalis	Walker, 1859	Moreton Bay	Mr. Diggles
Samea distractalis	Walker, 1869	Australia	#
Samea irruptalis	Walker, 1866	Moreton Bay	Mr. Diggles
Omiodes diemenalis	**(Guenée, 1854)**	**Tasmania**	**Lefebvre**
Asopia lydialis	Walker, 1859	Moreton Bay	Mr. Diggles
Orphanostigma abruptalis	**(Walker, 1859)**	**Sri Lanka**	**R.Templeton & Mr. Stevens**
Asopia suffectalis	Walker, 1866	Moreton Bay	Mr. Diggles
Pardomima pompusalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Pycnarmon meritalis	**(Walker, 1859)**	**Sri Lanka**	**R. Templeton**
Zebronia plexippusalis	Walker, 1859	Moreton Bay	Mr. Diggles
Sameodes iolealis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Calamotropha delatalis	(Walker, 1863)	Moreton Bay	Mr. Diggles
Ptochostola dirutellus	(Walker, 1866)	Moreton Bay	Mr. Diggles
Cataclysta lampetialis	Walker, 1859	Moreton Bay	Mr. Diggles
Elophila responsalis	(Walker, 1866)	Moreton Bay	Mr. Diggles
Parapoynx medusalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Parapoynx polydectalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Parapoynx villidalis	**(Walker, 1859)**	**Malaysia, Borneo**	**Mr. Saunders**
Hydrocampa sacadasalis	Walker, 1859	Moreton Bay	Mr. Diggles
Achyra massalis	(Walker, 1859)	Moreton Bay	Mr. Diggles
Epiecia externella	Walker, 1866	Moreton Bay	Mr. Diggles
# Unknown			

In the list those in blue are synonyms, which occur when the same species is named more than once and in most cases the oldest name takes precedence. Those in bold text are the valid names of a species which have a synonym named from Moreton Bay. Missing from the list; where more than one specimen was used to describe a species I have only included the locality of Moreton Bay and its collector. In many cases there may be more than one synonym but, except for *Nacoleia rhoeoalis*, I have only included synonyms from Moreton Bay.

From the list every specimen collected from Moreton Bay was named by Francis Walker and all except one was collected by Mr. Silvester Diggles.

Francis Walker (1809 – 1874) was an English entomologist contracted by the British Museum to catalogue their insects. He was a prolific author with more than 20,000 names associated with his descriptions. He stirred controversy during his later life as his publications resulted in a huge number of junior synonyms (Wikipedia). In the above list of the 38 Crambids he described from Moreton Bay, 18 proved to be synonyms. That's 47%! It may be understandable in cases where they were previously named by an author in another country and he was not up to date with the latest literature. But in the case above of *Nacoleia rhoeoalis* he has named it 6 times, 3 times in 1859, twice in 1866 and once in 1869 and placed it in 4 different genera. It is said that while naming specimens from a drawer, when time came for a break he would place a coloured pin beside the last specimen named and continue on when he returned. On one occasion while on his break, one of his colleagues moved his pin back six specimens and on his return Walker continued on and renamed the six specimens (Lambkin pers. comm). In his defence some say, that based on the sheer number he described, he was no worse than others of his time. Also the fact he was paid per specimen and not on a wage must have stirred up some jealously.

Silvester Diggles (1817–1880) born in Liverpool, England, moved to Sydney, Australia, with his wife and three children in 1853, eventually settling in Brisbane in 1855. He taught drawing and music and also tuned and repaired musical instruments. His wife died in 1857 and he remarried in 1858 and went on to have two more sons. He was a founder of the Brisbane Choral Society in 1859 and became known as 'the father of music in Brisbane'. In 1859 he helped to found the colony's first scientific institution, the Queensland Philosophical Society. In 1862 he was instrumental in the establishment of the Queensland Museum, a single room in the old windmill observatory on Wickham Terrace. In 1865 the first of his 21 part *The Ornithology of Australia* was issued. However, though first and foremost an ornithologist, his major contribution to our knowledge of Australian fauna was through the extensive collections of insects, particularly butterflies, moths and beetles, which he sent to overseas entomologists for description. Among the species that bear his name are the butterfly *Hypochrysops digglesii*, the rare chafer beetle *Tapeionschema digglesii* and the moth genus *Digglesia* which A.J. Turner bestowed on him in 1911 noting "After the late Mr. Diggles, the pioneer entomologist of Queensland".

If one was to add the Crambid types noted as collected from Brisbane to the above list and for that matter those from Stradbroke Island, being an island in Moreton Bay, the list would increase to 60 with 21 being synonyms. But this would add more authors and collectors and one could add to this article ad infinitum, or just add the 6 degrees of separation concept to Diggles and you have the man who invented Phonography (shorthand) Isaac Pitman, Diggles' second wife's mother's sister's husband. But I digress.

For more on Silvester Diggles and the History of the Queensland Museum, I recommend the following reads:

Silvester Diggles a Queensland naturalist one hundred years ago. Qld Nat, 17: 15-25 by Elizabeth N. Marks
http://www.serf.qut.edu.au/downloads/collections/en_marks/silvester_diggles.pdf
and
A TIME FOR A MUSEUM The History of the Queensland Museum 1862-1986, Memoirs of the Queensland Museum V24
http://ia700301.us.archive.org/20/items/MemoirsQueensla00Quee/MemoirsQueensla00Quee.pdf
other references
Gordh G. and Headrick D. 2011, *A Dictionary of Entomology 2nd Edition* CSIRO Publishing
wikipedia: http://en.wikipedia.org/wiki/Francis_Walker_(entomologist)
and http://en.wikipedia.org/wiki/Moreton_Bay

PS. The name Morton's Bay was given by Captain Cook when he passed the area on 15 May 1770, honouring Lord Morton, president of the Royal Society. The spelling Moreton was an error in the first published account of Cook's voyage.

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Butterfly Observations in Bundanoon NSW – *Alan Hyman*

Bundanoon is a picturesque small town with a population of approx. 2,500, located about halfway between Sydney and Canberra in the Southern Highlands of New South Wales. About 50 km inland from the coast, the town is perched on the north-western edge of the 192,353 hectare Morton National Park at an altitude of about 670 metres (or 2205 feet as noted on the historic railway station sign). To the east and south stretch the eucalypt forests and rugged, dissected plateau of the Park, while to the north and west are pastoral properties with remnant native vegetation cover. Winters are cold, summers warm to hot, with annual rainfall averaging approximately 1000mm and everything is sometimes magically cocooned in an atmospheric fog. Many residents have established cool climate plantings with exotics and there are several wetlands which, together with the surrounding rural and natural areas, provide a variety of vegetated environments.

Readers who like a change from the usual scientific content may leisurely enjoy my anecdotal notes on the butterflies of this region. Of the 416 butterfly species recorded for Australia (Braby 2004), I've noted about 55 species from Bundanoon and its

Buchanan's Lookout, Morton National Park
Bundanoon Creek Gorge (left)

Typical road through eucalypt forest,
Bundanoon Section Morton National Park

immediate surrounds. I say 'about' because all these observations are my own (and hence subject to correction, additional notation or comment by other persons) and include a number of Hesperiidae and other species seen but not as yet identified. The count also compares a little unfavourably with the 65 species recorded by Dr. S. Brown in '*The Gib'* 2006 for Mt.Gibraltar – an 863m bluff between Mittagong and Bowral, located 25 km to the north-east. Nevertheless, the observations below should serve as a reasonably valid baseline for further assessment as they have been carried out during more than 12 years of town and bushwalking, bush regeneration activities and gardening – and I am unaware of any similar local survey. All five major Australian families are represented in the district.

Five species of Swallowtail (Papilionidae) are recorded although only one, the Macleay's Swallowtail (*Graphium macleayanum*) could be called reasonably common. Its distinctive triangular shape with black, white and deep emerald green colouration render it easily recognizable as it momentarily alights on a spray of buddleia or sweeps across a park gorge. Its coastal cousin the Blue Triangle (*Graphium sarpedon*) is seldom encountered, as is the Small Citrus butterfly (*Papilio anactus*) but the dimorphic Orchard Swallowtail (*Papilio aegeus*) is not uncommon at times, the large black males especially often drawing attention as they erratically flap through the garden. During the summer of 2010-2011, I saw my first Chequered Swallowtail (*Papilio demoleus*) arrive here. Unusual weather conditions had obviously triggered a broader than usual migration and I saw several dozen specimens over a period of some weeks. Apart from a few individuals noted again in December 2012, these are the only encounters I have had in the area with this handsome insect.

The Whites and Yellows (Pieridae) are represented by ten species whose relative abundance varies enormously. The Cabbage White (*Pieris rapae*) for example, is very common in town and rural areas and perhaps even more so, the Caper White (*Belenois java*) during its occasional periods of summer migration. Three Jezebels are known for certain, the Black Jezebel (*Delias nigrina*) being the most common of the trio. Prominent in flight, the dark under surfaces and contrasting light upper sides (especially on the males) flash with a stroboscopic appearance in the sunlight. The

Wood White (*D. aganippe*) occurs in small numbers in favourable seasons and occasionally, the odd Imperial White (*D. harpalyce*). These are both 'stand-out' species, unmistakable (even at a distance) with their soaring flight and glorious red and yellow adornments to the undersides. There was a tentative sighting of a possible fourth species, the Yellow-spotted Jezebel (*D. nysa*). This specimen, which had uniform mid-brown colouration with yellow spots under its hindwings, may however have been a female 'dark-form' Caper White (*B. java*). During an extraordinary migration in December 2003 the Lemon Migrant (*Catopsilia pomona*) and the Common Albatross (*Appias paulina*) arrived together in large numbers, an event not repeated since, although the latter species sometimes makes a rare visit. Sporadic sightings of the Small Grass Yellow (*Eurema smilax*), a couple of probable Common Grass Yellows (*Eurema hecabe*) and a few Narrow-winged Pearl Whites (*Elodina padusa*) are the other species recognized.

Caper White (*Belenois java*)

Black Jezebel (*Delias nigrina*)

Wood White (*D. aganippe*)

Common Albatross (*Appias paulina*)

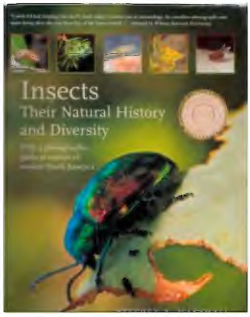
There are about twenty species of Nymphalidae recorded. The subfamily Satyrinae is well represented with twelve species, including no less than five examples of the genus *Heteronympha*. Individual species occur in overlapping succession from mid-spring, commencing with the aptly (if unimaginatively) named Common Brown (*H. merope*). This is arguably the most abundant butterfly in the district, being seen from late October (when there are predominantly males around) to late April when there are still a few female stragglers. In February, the Spotted Browns (*H. paradelpha*) appear although, while common enough, not in the numbers of the previous species. In some years the Shouldered Brown (*H. penelope*) is evident and finally the Banks' Brown (*H. banksii*) emerges – with its distinctive purplish suffusion under the hindwings – continuing through until well after Easter. The fifth species is the beautiful dimorphic Wonder Brown (*H. mirifica*) which, owing to its more secretive habits, is not normally seen with others in the genus. I have only encountered it on a handful of occasions – a tawny-orange male plus a few chocolate and cream females at odd times in our garden and several in the adjacent National Park – but I suspect that it may be more prevalent in the Park's rainforest gullies.

Common Brown (*Heteronympha merope*)

Shouldered Brown (*H. penelope*)

Ed.: Unfortunately I have to stop this article here but it will continue in the next issue.
Photos Alan Hyman

BOOK REVIEWS



Insects: Their Natural History and Diversity, with a photographic guide to insects of eastern North America

Author: Stephen A. Marshall

Reviewed by Irene Denton

Book first released 2006. My copy is Third printing, 2009.
Publisher: Firefly Books.
732 pages of nearly A4 size (21.5cm x 28cm); over 4000 photos; hardback.

First of all, a little of my background. I've been a bushwalker since my teens, but it wasn't until 1985 that I took up a more detailed study of nature

– specifically native orchids. A friend pointed out a *Caladenia* and I couldn't believe I had been walking past such beauty. My orchid enthusiast days began. In 1988 I took up bird watching. I then expanded into studying the entire range of plants, and gradually into other fauna. I'm learning a little about landscapes and waterscapes. These days I would call myself a general naturalist, with an amateur and reasonably detailed interest in each area (flora is quite a deep interest). There is so much to learn and see, and it's all so fascinating.

My more detailed interest in each area often correlates to the release of a great book. I have found that such a book greatly enhances appreciation of a field of nature, and moves people from a more general observational interest to really "getting into" the subject, learning and studying behaviour, and making efforts to identify what they see. In Australia, we have seen recent releases of more detailed field-guide sized books on butterflies, dragonflies and beetles. However, despite lots of web searches and bookshop perusal, I hadn't been able to find any sufficiently detailed books on the total gamut of insect families, Australian or otherwise.

The Insects of Australia by Douglas F. Waterhouse was published in1970, and is only available second-hand. The only relatively recent-edition books that I've been able to find are field-guide sized (around 14 cm x 21 cm) and around 200 to 240 pages, with only about 1-4 images per family. They are certainly good for an early beginner, but I have been looking for something beyond that to progress my knowledge.

Searching for coverage of Australian insects led me to Stephen Marshall's 'Insects' book, with which I've been very happy. Whilst the focus of the book is eastern North America, the keys and photos are said to be useful for identifying orders and most families of insects in the world. Some sub-families are included. Marshall's 'Insects' book has what I want:

- coverage of the full range of insects, on a reasonably recent basis regarding taxonomy;
- enough information to distinguish between classes, orders and families of insects, by text (key and/or description) and pictorially (photographs and line drawings). A large number of genera are touched upon; and
- lots of good photos. I am willing to learn scientific terminology and study anatomical drawings, but lots of clear photos help. They also provide enormous pleasure in viewing the wonderful colours, patterns and structures of the subject.

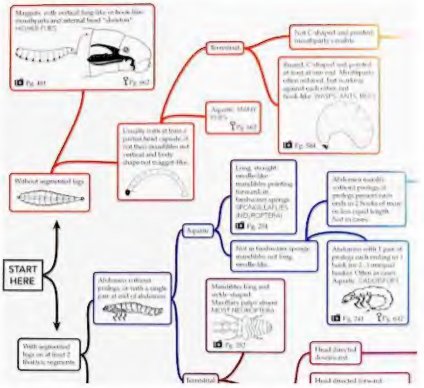
Obviously there are too many genera, and particularly species, to be able to present all of them in one book. Seeing the differences between orders and families is not always possible because, with the small size of insects, getting up close and personal with a specimen is sometimes required, but not possible. However, in these days of macro photography, and the ability to zoom into detail on a computer screen, it is more possible than ever to match a feature with detail in a good book.

After a very short introduction, Stephen Marshall's 'Insects' book has 12 major chapters covering insects. Each chapter starts with text regarding the orders in that

chapter, covering some of their anatomy and biology. This discussion is at an introductory and relatively high level, and is in reasonably plain English, perfect for someone at my amateur level.

A sample page of *Hymenoptera* photos

Each chapter ends with a great presentation of photos. All of the 4000 plus photos were taken by Stephen Marshall – a fabulous achievement. As well as photos of adults, there are images of larvae and pupae, and some photos depict behaviour. The pages of photos follow a fairly standard layout of nine images per page, with text underneath, organised by order, then family and in some cases, sub-family.



This is the start of the key to the Most Commonly Encountered Insect Larvae

After the chapters is a 53-page series of pictorial keys. They follow the usual keying method of making a choice between 2 options, and the keys are laid out with boxes joined by lines, with most of the boxes containing a line drawing to demonstrate the anatomical feature. The keys start at the highest level of identifying insect orders, then separate pages cover each order with keys down to family level.

In addition to insects, this book has a chapter (no key) on non-insect arthropods such as millipedes, centipedes, spiders, crustaceans, making it a pretty complete reference book on small fauna.

Last of all is the Index. In this book there are three indexes: (1) the photos, listing both scientific name and the eastern North America "official" capitalised common name, (2) Common Name index, being very general names that are in worldwide use such as "beetle, jewel", and (3) a General Index which includes both scientific names and other plain English words used such as behavioural terms. I personally prefer a book to have just one index, for ease of looking up entries without having to check

which index I've opened. When scientific and common name indexes are separate, there's theoretically a 50/50 chance of opening at the right index, but I seem to "always" open the wrong one! Indexes should be extremely thorough, even if this means that multiple entries cover the one subject. For example, I want to be able to find Net-winged Beetle under N for Net-winged and B for Beetle.

In this book, the indexing is quite thorough with multiple entries, though there is one frustrating aspect. Genera are not listed independently in the General Index; rather the reader must know what family the genus resides in.

My plea to all intending authors and publishers: please, one index only, and an extremely thorough one that does not require pre-existing knowledge by the reader.

The book under review has some useful line drawings in the key, and many of the scientific terms used in the chapters and keys are followed by a few explanatory plain English words in brackets.

There is no glossary of terminology, which may be understandable as a dictionary of entomology is a major book in itself. As a side note, a web search shows that there are books on entomology terminology, quite a few out of print. Some currently available ones are terribly expensive for someone like myself at a more generalist naturalist level. There are some good websites covering parts of entomology terms and insect anatomy, but it's obviously more convenient to have a paper based book to look up at any time. I find that many websites require too much flicking from screen to screen and don't provide the ability to compare multiple images side by side. The subject of entomology reference sources is a separate review subject in its own right.

Stephen Marshall's book is a wonderful resource. Despite its coverage up north, I have already found it helpful regarding Australian insects. It really opens up the world of insects and other arthropods to people who otherwise might not delve very deeply into this area of fauna. The other great pleasure to be derived from this book is seeing such detailed work by one person, demonstrating the great value of some people in this world being specialists rather than generalists.

This *Trypoxylon politum* wasp (listed for Australia) is arriving at her nest, the shape of which gives rise to the common name "organ pipe mud dauber".

The fluffy silk mass under this caterpillar is made up of the cocoons of its killers: braconid parasitoids in the genus Cotesia. Adult wasps at bottom of image.

I bought the 'Insects' book through Abbey's Bookshop, Sydney (via their website) for a reasonable AUD$103.50 (cheaper than getting the book from overseas online bookshops after their mail and weight charges, and bank foreign currency exchange fees). Correspondence with Stephen Marshall confirms that no update is planned for the "Insects" book before 2015, so don't wait for a new edition.

Toxomerus nasatus (main picture, left) and *Allograpta fasaciata* (main picture, right), photographed near Quito, Ecuador

Stephen Marshall has also very recently published the book **Flies: The Natural History and Diversity of Diptera** Book first released late 2012. Publisher: Firefly Books. 616 pages of nearly A4 size; over 2000 photos; hardback.

The Flies book includes this *Tapeigaster* sp. fly photographed in Australia. Their larvae live in fungi.

This book covers flies, strictly the Diptera order, from all around the world including Australia, rather than concentrating on North America. It follows the same general layout, including photos and keys, as described above for the 'Insects' book. This new Flies book is getting rave reviews on the internet.

[1] Photos: Irene Denton photographed the images from the book with the author's permission. Original photos by Stephen A. Marshall.

REPORTS

President's Report to AGM 2013

I must commence this report by thanking individual members of our Management Committee whose various contributions have ensured that the club has had another successful year.

John Moss continues to work to ensure that the articles published in our magazine reach a high standard of scientific accuracy. He is also a great ambassador for the club through his association with a number of community groups and organisations.

The result of Daphne's editorial skills each quarter is a frequent reminder of her patience, persistence and skill as she receives submissions from authors, consults with specialist referees, negotiates amendments if required, joins the jigsaw pieces into a coherent whole, works with our printers to get a quality finished product which is finally slipped into previously organized labeled and stamped envelopes for mailing to our widely dispersed members. Daphne keeps our membership database current and expends considerable time contacting a small number of members who "forget to

pay their subs". Quite a number of enquiries come via the web and Daphne ensures that these are dealt with by her or are referred to other members.

Lois's great artistic talents are usually on display on the cover of the magazine. If you have not seen a copy of "Birdwing's New Home" with its many brilliant illustrations by Lois, then I strongly recommend you obtain a copy.

Rob continues to keep track of club finances with professional accuracy.

You will have read of Alicia's academic exploits in the March edition of our magazine. She continues to explore possibilities of excursions for our local (Brisbane region) members remembering that a large proportion of our members are not resident in this area.

Jennifer Singfield took on the role of club secretary in the last year and volunteered to organize fund raising activities through trivia nights. Through the voluntary efforts of Jennifer, some of her friends and some club members, two of these events were conducted, much to the enjoyment of those who attended and to the financial benefit of the club.

I thank club members Richard Zietek, Ian Ferrier, Margaret Greenway, Cheryl Knight and Peter Hendry for their support at the various displays we conducted in the last year. We do need more members to help out in the future. I am aware that some club members are active in their local communities and we intend to report on this in the future.

In the last year we held displays and sold printed materials and plants at the IndigiScapes Centre at Capalaba, the Society for Growing Australian Plants plant sale at the Mt Coot-tha Botanical Gardens, at the Jacob's Well Environmental Centre and at the Moreton Bay Regional Council Osprey Centre at Dohles Rocks. These events enable us to widen our impact in the community and to raise funds for the club. Helpers are needed for future displays, as are butterfly host and nectar plants.

The magazine continues to be a central focus of the club and this is understandable, as a large proportion of our members do not reside in the closer Brisbane region. I am very grateful to those members and non-members who make such a magnificent contribution to the success of our publication.

Last year, we increased our membership fee to cover the cost of printing and postage of the magazine. We also received a $1000.00 grant from the Brisbane City Council. Through the efforts of club member Phil Ocshe, we were able to find a new printer for the magazine. Phil has also helped Daphne colour-correct the images for printing. Printing costs have fallen and the club is now in a healthy financial position. This is fortuitous as we hope to publish our long awaited mistletoe book in the current year. Sales of the club's butterfly host plant book have more than covered our printing costs. This book continues to be the definitive reference for this area and is still in demand.

It has been a good year but I often think about the fact that many of us in the management committee are "not getting any younger" and I would really welcome younger members and ideas. *Ross Kendall*

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A visit to Ray and Delphine Archer's – *Lois Hughes*

Despite the threat of inclement weather and the fact that the Gatton end of the road was closed at the bridge over Lockyer Creek, an enthusiastic group of people descended on Ray and Delphine Archer's property on February 24th. With only one brief shower, the rain held off until evening.

The really eager photographers from the Redlands' group arrived early to be followed by BOIC members around 10 am. Around 40 people attended on the day.

The butterfly house was alive with hundreds of butterflies on the wing, munching caterpillars were eating furiously and pupae waited patiently for their butterflies to emerge. Two species of stick insects were doing their usual hanging about while we were very interested in the many host and nectar plants growing there.

At a gathering beneath a gazebo in the garden near the house Ross and Ray welcomed members and friends. Some had travelled quite a long distance to join us.

We heard from Daniel who coordinates a project at the local prison (with Ray's enthusiastic advice) where a group of inmates have learnt to raise the appropriate host plants and to breed Varied Eggflies in enclosures. Their goal is to send pupae in decorative boxes to children who are hospitalised. The children will see butterflies emerge for later release. Daniel told us of the teething problems faced: security clearances, lethal x-rays, fingerprinting, the deadly effect of unannounced fumigation for bugs, and bureaucratic indifference.

Ray spoke briefly of the overseas projects that the Archer Foundation co-ordinates in assisting the "poorest of the poor" to gain some economic self-sufficiency. Later, most visitors collected left over host and nectar plants from the Butterfly Plants for Poverty nursery and made donations to their cause.

One of our new members, Brett Hoopert, spoke about his new butterfly house and plant nursery at Nambour. It is called "Butterfly Hill".

There were lots of butterfly species flying and breeding on the thousands of host plants that Ray and Delphine have planted in the past three years. These kept the photographers busy for quite some time.

Some early arrivals headed off while the rest of us enjoyed a late lunch and chat beneath the gazebos with the birds serenading us from the dense shrubbery. Heading for home, we enjoyed the countryside clothed in lush green following the earlier abundant rains.

Thank you Ray and Delphine for your generous hospitality and an enjoyable visit

Beetles, Bees, Bugs and Butterflies photographed at the Archer's

Photos
Erica
Siegel©

Figs 1&2 Acacia Leaf Beetles (*Dicranosterna picea*) Fig. 3 Blue-banded Bee (*Amegilla* sp.)
Fig. 4 Fire-tailed Resin Bee (*Megachile* sp.) Fig. 5 Probably *Aulacosternum* sp. Family Coreidae
Fig. 6 Large Milkweed Bug (probably *Spilostethus hospes* (Fabricius, 1794) Family Lygaeidae)
Fig. 7 Orchard Swallowtail Butterfly (*Papilio aegeus*) Fig. 8 Varied Eggfly (*Hypolimnas bolina nerina*)

BOIC fundraising trivia night - *Alisha Steward*

A fun-filled trivia night was held by BOIC at the Indigiscapes Centre on Saturday 20th April 2013. The pace was fast, with many challenging questions to answer throughout the evening. Our quiz master, Jill Barrett, also offered some extra games and prizes in addition to the trivia ones. There was also a lucky door prize. Supper, tea and coffee were provided at half time for a well-earned break. Supper was a pleasant surprise as I (unexpectedly) caught up with friends who I hadn't seen in years!

Congratulations to the winning trivia team, 'The Flashers' (sorry everyone, 'Flashers' as in photographers – not what you are thinking ☺). A bottle of wine was awarded to each member of the winning team and 'Savy Six', the second-placed team which contained our two BOIC members from Petrie, Allan and Judy Lovelock, and over 30 prizes were won as part of the multi-draw raffle. My impression was that at least one person per table had won something in the multi-draw raffle. Most tables seemed to be covered in prizes by the end of the night!

Many thanks are due to the BOIC members and non-members who made the night a success. A cast of thousands made it possible – our quiz-master Jill Barrett, the judges Helen Magarry and Ruth Taylor, Jeanette Adams for setting up and lots of help on the night, people who donated raffle prizes including Daphne Bowden and family - Daphne and daughter-in-law, Kiri, also provided the food for supper - Pat Barry for supervision of multi-draw raffle and behind the scenes evening work and everyone who helped to plan the night, in particular the project organiser Jennifer Singfield. Apologies if I have missed anyone.

Funds raised will go towards the production of BOIC publications. We are hoping that the trivia night will become an annual event in the BOIC activities calendar. It was certainly a lot of fun!

Ed. Thank you to Alisha who provided the prizes of a dozen bottles of wine to the winning tables.

Above - The prizes on offer as part of the multi-draw raffle - BOIC-related prizes included posters, books, and host plants. Other prizes included (but were not limited to) chocolates, cosmetics, wine, gift vouchers, and BBQ tools!
Photo on right - Jennifer Singfield announcing the multi-draw raffle ticket winners

Jill Barrett reading out the trivia questions to 8 tables of eager participants

Our BOIC president, Ross Kendall, thanking everyone for their help and attendance

Photos Alisha Stewart

LETTERS

Hi Daphne

Just returned from 2 weeks of hiking in the south island of NZ, out in national parks and private land where the owners are either trying to return the previous sheep property to native habitat, or are trying to diversify their business by inviting hikers on site.

Not many butterflies seen on our travels, but one that certainly caught my eye was the Red Admiral, *Bassaris gonerilla*, which had quite spectacular red colouration.
It was very common up at higher elevations where we walked in sunny ridges and cleared sites adjacent to natural remnant vegetation. Its host plant, the native stinging nettle, *Urtica ferox*, was common in the areas where we encountered the Admiral naturally enough. We also saw many Admirals with brown colouration, totally lacking any red, but we didn't find out whether this was sexual dimorphism, or another species.

The photo doesn't do justice to the vivid colouration of the Red Admiral, especially when out displaying in the sun.

We made an interesting observation one day as we walked along an exposed ridge, fringed by native vegetation including clumps of the Nettle. A Fantail, *Rhipidura fuliginosa,* was often shadowing us as we moved along trails on most days (it wasn't the same bird each day of course!) looking for insects we disturbed, flitting about always within 10 metres of us. As we came upon a sunny opening in the canopy, a vibrant Red Admiral butterfly was flying about. It landed on a tree trunk that was in the sun and immediately opened its wings out flat displaying the bright colouration. But as we came closer, it closed its wings, becoming well-camouflaged on the brownish-grey bark, and stayed like this for about 15 seconds. We quickly realised that it had not only seen us but also our attendant Fantail flitting around us, and was keeping its colours out of sight. But as the Fantail flew close to the butterfly, the butterfly got spooked and took off. Immediately the Fantail decided it was too good a chance to miss and went after it. But on this occasion the prey won out, and the predator missed a meal. So it was interesting to see this initial camouflage reaction by the butterfly knowing its bright red colours were too obvious to a predator out in the sun.

Below is a photo of the actual Admiral butterfly before it closed its wings and a photo of the Stinging Nettle. Regards, Glenn Leiper

Photos Glenn Leiper

YOU ASKED

Q. This is a photo of a huge blue ant we saw in Tasmania. It's as long as the width of a 20 cent piece! Can you identify it please? Glenda Crowther

A. Thanks for your request. Your image is of a female *Diamma bicolor* (flower wasp), she feeds on blossom and has a powerful sting. She deposits her eggs on mole crickets which her larvae parasitise. The male wasp is a very small winged black fellow easy to overlook. Chris Spencer, Technical Officer, Forest Practices Authority, Tasmania

Q. I found this web in the fold of an old plastic sheet, tucked away in a darker corner of the patio. The web stretches across what looks to me like the empty pupa of a hawk moth - am I right? There are a couple of seedpods of *Acacia fimbriata* thrown in for good measure. I am wondering what kind of spider might have made this web. And did the moth escape - or was it breakfast? Glenine Hamlyn

A. This is a hawk moth pupa as suspected, possibly *Theretra latreillei*. The larva pupates amongst litter at the ground surface and constructs the open cocoon interwoven with bits of debris as protection. While this species of hawk moth pupates in a rough open cocoon amongst litter (as do many others) some hawk moths such as the Privet hawk moth pupate in a cell below the ground surface. Max Moulds

Q. I wonder if you can help me. I'm trying to identify what this creature is. It is about 15-20 cm long ~5 cm in diameter. My Mother discovered it in her garden in Sanctuary Point, NSW. I remember seeing something similar there in Dec 2006 on the brick wall of the house and it was the exact size of a brick.

We would be really interested to know what it is. Thanks, Joe Turnbull

A handsome White-stemmed Gum moth newly emerged rests on the cocoon that kept it safe during pupation

A. This is the larva of *Chelepteryx collesi*, the White-stemmed Gum Moth. *Chelepteryx collesi*, of the moth family Anthelidae, occurs in the three eastern states of Australia. The common name White-stemmed Gum moth refers to the Eucalyptus species that is one of its food plants. The wingspan of the female moth may reach 160 mm and the equally impressive caterpillars that feed on the leaves of paperbarks and eucalyptus can reach 120 mm in length. This moth has an annual life span, with adult moths usually appearing in Autumn. Densey Clyne

Fig. 1 Rosettes of sharp spines (*setae*) on the caterpillar's body are an effective deterrent against enemies and can also inflict damage on interfering humans.

Fig. 2 Hooks (*crotchets*) and a suction disc on each abdominal leg (*proleg*) keep the heavy caterpillar from falling out of its tree.

Fig. 3 The spindle-shaped silk cocoon under construction in the foliage will take several hours to complete.

Fig. 4 A cocoon takes the form of an openwork net as the caterpillar works inside it, strengthening the silk fabric.

Fig. 5 As it weaves, the caterpillar sheds the protective setae, pressing them through the silk to form an effective deterrent against birds.

Fig. 6 Inside the finished cocoon the caterpillar has cast off its skin and started its period of dormancy as a pupa.

Photos Densey Clyne

PLANT PROFILE …. UPDATE

In the December 2012 edition of "Metamorphosis Australia" (page 9), my article on the butterfly host plant *Capparis canescens* (Wild Pomegranate) detailed the plant's features and varied wildlife uses.

A number of photos were included with the article, showing the attractive flowers, bark and foliage, but none included the fruit.

Like all *Capparis* species, the fruit has been used by either indigenous people or subsequently "bush tucker" enthusiasts as a food, although in comparison to the exotic cultivated Caper, it leaves a little to be desired!

The fruit, which can vary from 2.5 cm to 7.5 cm diameter, on a stalk between 6 and 9 cm long, are usually found in autumn. *Glenn Leiper*

Photo Ross Kendall

B.O.I.C. ON FACEBOOK

Join BOIC on Facebook! Some friends of BOIC were "lost" during changes to Facebook within the last year, so please check to see if you are still part of the BOIC Facebook group. If you are on Facebook you can join the BOIC page here - https://www.facebook.com/groups/187619097411/

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Committee/Planning Meeting – 10th August, 2013

Caboolture Region Environmental Education Centre (CREEC) - Expo

What: BOIC will hold a display at this event. The theme is around the CREEC site and the management of Burpengary Creek. The day will see workshops and talks on different subjects, including Macadamia, Bugs Ed, Native Bees, and native wildlife presentations from Geckoes, also with a number of schools participating in Indigenous art paintings of Ocean Life. There will be guided walks which will take you to an allocated area where talks about the CREEC site and Burpengary Creek will take place.

When: **24th August, 2013 – 10am-3pm**

Where: The Caboolture Region Environmental Education Centre (CREEC) at 150 Rowley Road, Burpengary

SGAP Spring Flower Show and Plant Sale

What: We will be holding a display at this event. Members looking for butterfly/moth hostplants may find something interesting amongst the plants for sale.

When: **31st August and 1st September 2013**

Where: The Auditorium, Mt. Coot-tha Botanic Gardens

DISCLAIMER

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provided the cover painting
- Daphne Bowden who works on layout, production and distribution
- John Moss, Dr. Kelvyn L. Dunn and Robert Whyte for scientific referencing and proof reading of various articles in this issue of the magazine
- Printing of this publication is proudly supported by Brisbane City Council

We would like to thank all these people for their contribution.

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Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Next event – Caboolture Region Environmental Education Centre (CREEC) - Expo
24th August, 2013 – See BOIC Programme for details